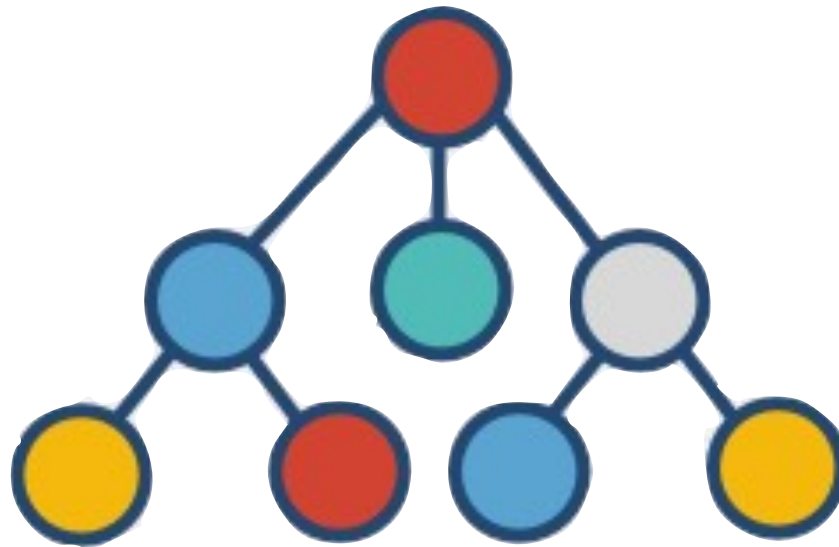


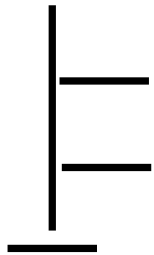
DATA STRUCTURE & ALGORITHMS



(By Prince Agarwal)
[“HELLO WORLD”]

BINARY TREE IN C++

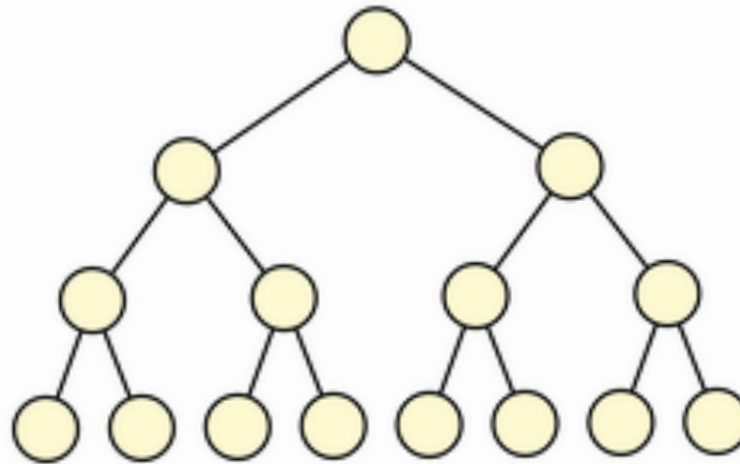
WHAT IS BINARY TREE ?



A tree whose elements have at most 2 children

Now, we name them, Left child & Right child

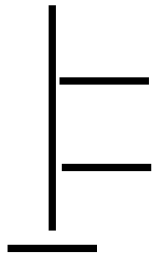
Examples of Binary Tree



Hello world

BINARY TREE IN C++

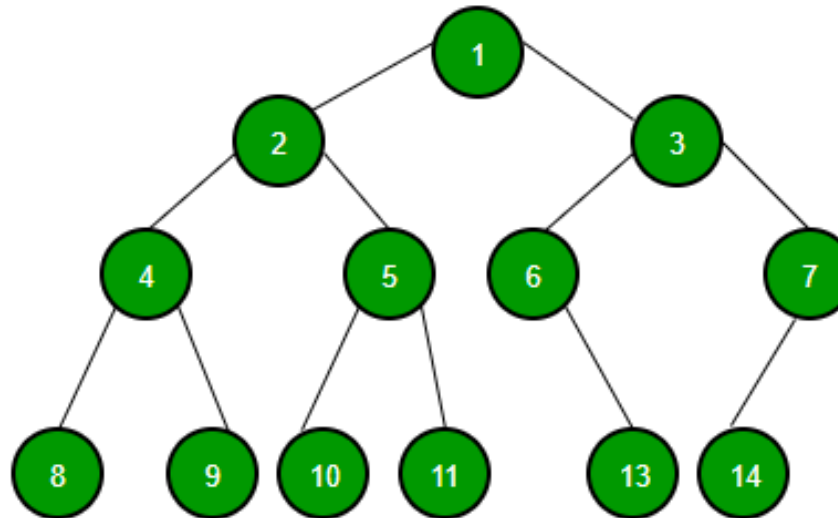
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A tree whose elements have at most 2 children

Now, we name them, Left child & Right child

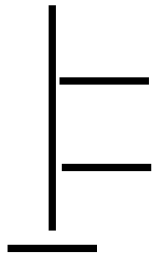
Examples of Binary Tree



Hello world

BINARY TREE IN C++

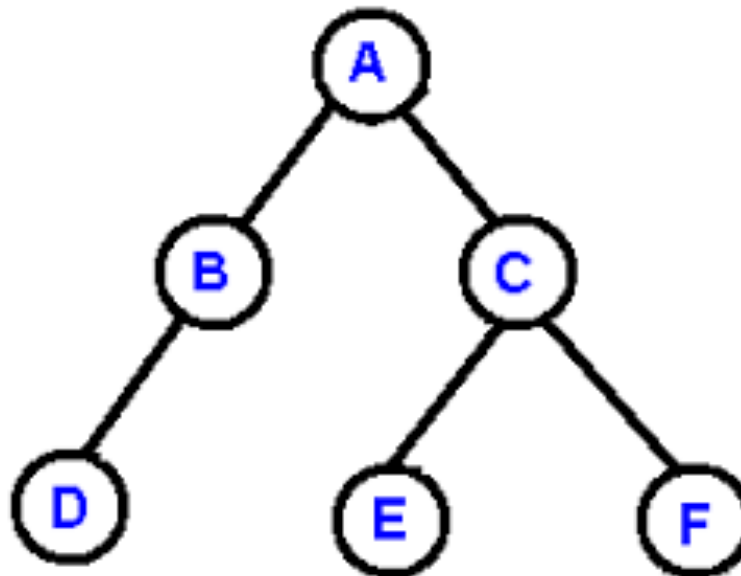
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A tree whose elements have at most 2 children

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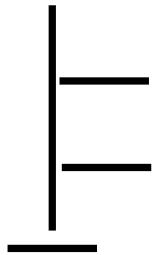
Examples of Binary Tree



Hello world

BINARY TREE IN C++

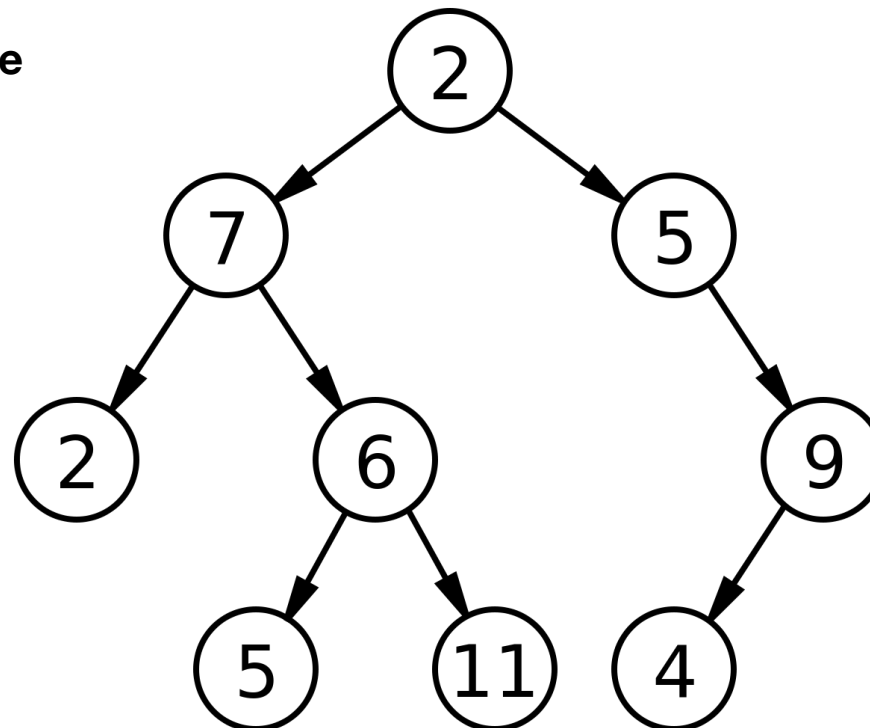
WHAT IS BINARY TREE ?



A tree whose elements have at most 2 children

Now, we name them, Left child & Right child

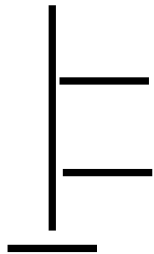
Examples of Binary Tree



Hello world

BINARY TREE IN C++

BINARY TREE REPRESENTATION



 A tree is represented by a pointer to the topmost node in tree

 If the tree is empty, then value of root is NULL.

A Tree node contains following parts.

Data

Pointer to left child

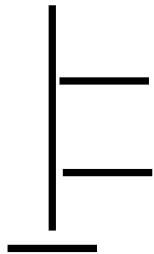
Pointer to right child

```
struct node
{
    int data;
    struct node *left;
    struct node *right;
};
```

Hello world

BINARY TREE IN C++

BINARY TREE REPRESENTATION



■ A tree is represented by a pointer to the topmost node in tree

■ If the tree is empty, then value of root is NULL.

A Tree node contains following parts.

Data

Pointer to left child

Pointer to right child

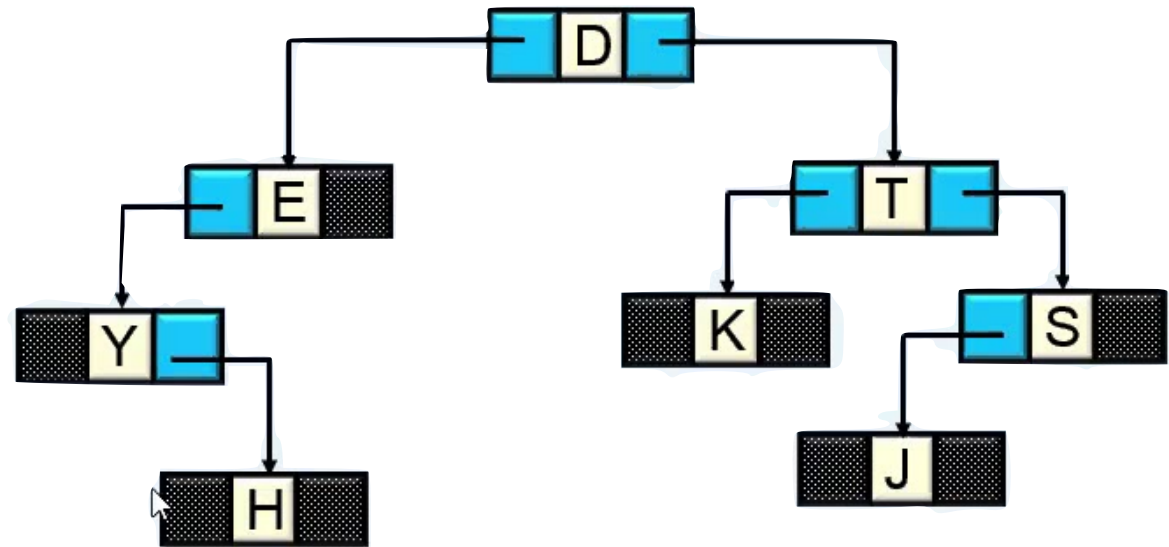
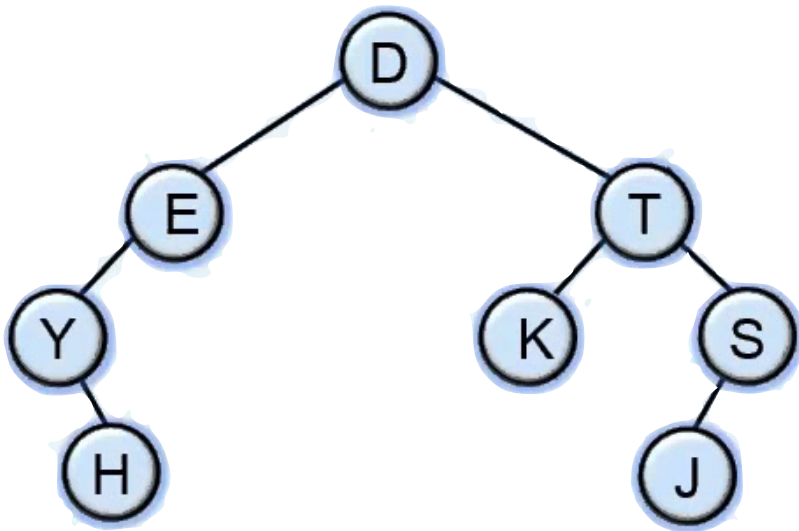


```
struct node
{
    int data;
    struct node *left;
    struct node *right;
};
```

Hello world

BINARY TREE IN C++

BINARY TREE REPRESENTATION IN GRAPHICAL WAY

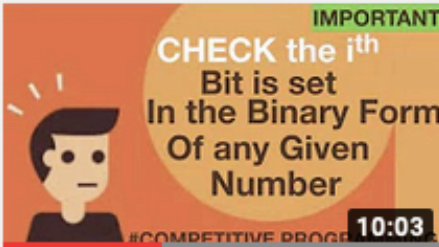




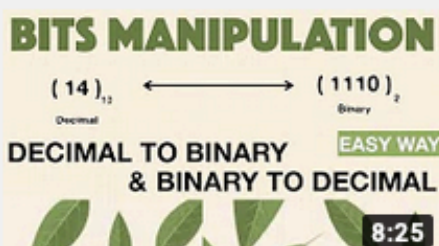
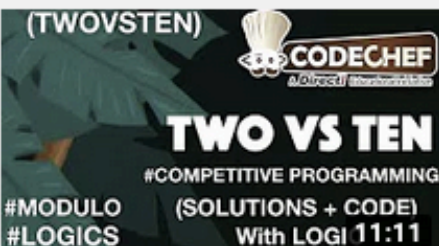










Tree is a hierarchical data structure

Main uses of trees include maintaining hierarchical data

Binary trees are special cases of tree where every node has at most two children.

Hello world

 <p>CHECK the i^{th} Bit is set In the Binary Form Of any Given Number</p> <p>IMPORTANT</p> <p>#COMPETITIVE PROGRAMMING 10:03</p>	 <p>COUNT THE NUMBER OF ONE'S PRESENT IN BINARY NUMBER</p> <p>VERY EASY</p> <p>#COMPETITIVE PROGRAMMING 13:44</p>	 <p>CHECK GIVEN NUMBER IS POWER OF 2 ?</p> <p>EASY WAY</p> <p>(FULL EXPLANATION WITH CODE)</p> <p>#BITWISE #BINARY</p> <p>HW Hello World</p> <p>#COMPETITIVE PROGRAMMING 15:28</p>	 <p>LEFT SHIFT RIGHT SHIFT BITWISE OPERATOR</p> <p>EASY WAY</p> <p>(PART - 02)</p> <p>#COMPETITIVE PROGRAMMING 15:24</p>	 <p>AND NOT XOR OR BITWISE OPERATOR</p> <p>EASY WAY</p> <p>(PART - 01)</p> <p>#COMPETITIVE PROGRAMMING 13:06</p>
<p>Check the i^{th} bit is set, in the binary form of given numbe...</p> <p>1.1K views • 1 year ago</p>	<p>Count the number of one's in binary representation of...</p> <p>1.6K views • 1 year ago</p>	<p>Check a given number is power of 2 Bitwise operato...</p> <p>3.2K views • 1 year ago</p>	<p>Left shift and right shift bitwise operator ...</p> <p>1.4K views • 1 year ago</p>	<p>Bitwise Operators AND NOT OR XOR Competitiv...</p> <p>1.8K views • 1 year ago</p>
 <p>BITS MANIPULATION</p> <p>(14)₁₀ ↔ (1110)₂</p> <p>Decimal Binary</p> <p>DECIMAL TO BINARY & BINARY TO DECIMAL</p> <p>EASY WAY</p> <p>#8:25</p>	 <p>(TWOVSTEN)</p> <p>TWO VS TEN</p> <p>#COMPETITIVE PROGRAMMING</p> <p>#MODULO #LOGICS</p> <p>(SOLUTIONS + CODE) With LOGI 11:11</p>	 <p>(CHEFROUT)</p> <p>CHEF AND HIS DAILY ROUTINE</p> <p>#COMPETITIVE PROGRAMMING</p> <p>(SOLUTIONS + CODE) With LOGI 12:56</p>	 <p>EUCLIDEAN ALGORITHM</p> <p>FINDING GCD OF TWO NUMBERS</p> <p>#COMPETITIVE PROGRAMMING</p> <p>12:31</p>	 <p>SEIVE OF ERATOSTHENES</p> <p>PART - 02 (CODE)</p> <p>#COMPETITIVE PROGRAMMING 12:01</p>
<p>Bits Manipulation Decimal to Binary Binary to Decimal...</p> <p>1.5K views • 1 year ago</p>	<p>Program of Two vs Ten Codechef - TWOVSTEN ...</p> <p>1.3K views • 1 year ago</p>	<p>Program of chef and his daily routine - CHEFROUT ...</p> <p>1.7K views • 1 year ago</p>	<p>Euclidean algorithm for finding GCD of 2 numbers ...</p> <p>2K views • 1 year ago</p>	<p>Sieve of Eratosthenes -part 2 Competitive programming...</p> <p>2.2K views • 1 year ago</p>
 <p>SEIVE OF ERATOSTHENES</p> <p>PART - 01 (LOGIC)</p> <p>#COMPETITIVE PROGRAMMING 8:38</p>	 <p>#Concept / Program of #Prime Numbers</p> <p>CONCEPT OF PRIME NUMBERS</p> <p>#COMPETITIVE PROGRAMMING 13:38</p>	 <p>VERY IMPORTANT CONCEPTS</p> <p>#memset() function #In C/C++</p> <p>USE OF MEMSET()</p> <p>#COMPETITIVE PROGRAMMING 12:00</p>	 <p>(FANCY)</p> <p>FANCY QUOTES</p> <p>#COMPETITIVE PROGRAMMING (SOLUTIONS + CODE) With LOGI 15:46</p> <p>#Strings #getline()</p>	 <p>(ALPHABET)</p> <p>#Clears String Concept #String</p> <p>STUDYING ALPHABET</p> <p>#COMPETITIVE PROGRAMMING (SOLUTIONS + CODE) With LOGIC 24:28</p>
<p>Sieve of Eratosthenes -part 1 Competitive programming...</p> <p>3.4K views • 1 year ago</p>	<p>Program and concept of prime numbers. ...</p> <p>2.1K views • 1 year ago</p>	<p>memset() function in C/C++ and its syntax. Competitiv...</p> <p>4.3K views • 1 year ago</p>	<p>problem of Fancy Quotes getline() in strings --FANCY...</p> <p>2.1K views • 1 year ago</p>	<p>Concept of Handling the String related problems -...</p> <p>3.4K views • 1 year ago</p>

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